

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT : **PIPER, Todd Elliott**  
SERIAL NO : 10/764,899  
FILED : January 26, 2004  
TITLE : INBRED MAIZE LINE PH54M

Grp./A.U. : 1638  
Examiner : MEHTA, Ashwin D.  
Conf. No. : 2639  
Docket No. : P06270US01 - PHI 1363C

**PETITION TO WITHDRAW A TERMINAL DISCLAIMER  
UNDER 37 C.F.R. § 1.182**

Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

The Applicant petitions to withdraw a Terminal Disclaimer inadvertently filed. A first Terminal Disclaimer was properly filed and its filing overcame the relevant double patenting rejection. This Petition is to withdraw a second Terminal Disclaimer inadvertently filed.

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**CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))**

I hereby certify that this correspondence is, on the date shown below, being:

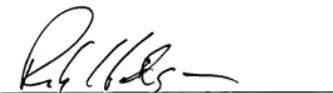
MAILING

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Alexandria, VA 22313-1450.

Date: 5/1/07

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transmitted by electronic/facsimile to the Patent and Trademark Office, Art Unit 1638 at Fax No. (571) 273-8300.



Robert A. Hodgson

1. The Examiner rejected claims 19-22 and 25-27 in the Office Action of September 8, 2006 on the ground of Nonstatutory obviousness-type double patenting as being unpatentable over claims 1-30 of U. S. Patent No. 6,730,836 ('836) in view of Larkins (U.S. Patent No. 6,232,535) (Exhibit 1). Such a rejection often occurs where a child application is rejected for nonobviousness-type double patenting in view of a parent.

2. Applicant overcame this rejection by properly submitting a Terminal Disclaimer of prior Patent No. 6,730,836 (Exhibit 2) with the Amendment filed January 8, 2007 (Exhibit 3). In the Amendment, Applicant stated "Applicant is herein submitting a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321(c), which disclaims any term of a patent issuing from this application which would extend beyond the term of copending U.S. Patent No. 6,730,836 in view of Larkins (U.S. Patent No. 6,232,535)."

3. In addition to the proper Terminal Disclaimer of prior Patent No. 6,730,836, a Terminal Disclaimer to Patent No. 6,232,535 was submitted with the Amendment of January 8, 2007 (Exhibit 4). This Terminal Disclaimer was not referenced in the remarks of the Amendment of January 8, 2007 and was filed in error.

4. After learning that the second Terminal Disclaimer to Patent No. 6,232,535 was filed, the undersigned attorney contacted the Examiner in a similar case that has this issue and explained the inadvertent submission of the second Terminal Disclaimer to Patent No. 6,232,535. The Examiner stated that a Petition to Withdraw the Terminal Disclaimer to Patent No. 6,232,535 would need to be filed and confirmed that the single terminal disclaimer removed the double patenting rejection.

5. Nonstatutory obviousness-type double patenting rejection of claims 19-22 and 25-27 was properly overcome by Applicant's submission of the Terminal Disclaimer of prior Patent

No. 6,730,836. The submission of the Terminal Disclaimer of prior Patent No. 6,232,535 is unnecessary to overcome this rejection.

6. Applicant accordingly hereby petitions the Office to withdraw the submitted Terminal Disclaimer of prior Patent No. 6,232,535.

7. Please charge the fee of \$130.00 for this Petition as set forth in 37 C.F.R. 1.17(h) to Deposit Account No. 26-0084. No other fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Respectfully submitted,



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Attorneys of Record

- pw -

Enclosures: Exhibits 1, 2, 3 and 4



# UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,899	01/26/2004	Todd Elliott Piper	P06270US01 - PHI 1363	2639
27142	7590	09/08/2006		
MCKEE, VOORHEES & SEASE, P.L.C. ATTN: PIONEER HI-BRED 801 GRAND AVENUE, SUITE 3200 DES MOINES, IA 50309-2721			EXAMINER	MEHTA, ASHWIN D
			ART UNIT	PAPER NUMBER
			1638	

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

EXHIBIT

1  
1

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/764,899	PIPER, TODD ELLIOTT
	Examiner Ashwin Mehta	Art Unit 1638

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 13 September 2005.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-30 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-30 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 12/29/2004

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: *Request under 37 CFR 1.105*

**DETAILED ACTION**

***Priority***

1. In the priority statement in lines 10-12 of page 1 of the specification, the status of U.S. application 09/759,801 should be updated to recite the patent number that issued from it.

***Information Disclosure Statement***

2. The IDS filed January 26, 2004 contains a PTO-891 that was mailed by the USPTO during prosecution of parent application 09/759,801. The information listed in that form has been considered in the instant application. However, this is not a proper form 1449. Applicants should submit a form 1449 listing the references cited on the 891 form.

***Claim Objections***

3. Applicant is advised that should claims 2 and 3 be found allowable, claims 5 and 6 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Claims 2 and 3 depend from different claims than claims 5 and 6. However, the scopes of claims 2 and 5, and of claims 3 and 6, are the same. The plant of claim 2 is produced by growing F1 hybrid seed, which has one set of chromosomes of inbred line PH54M. Growing F1 hybrid seed produced by crossing PH54M with a different maize plant produces the plant of claim 5. Claim 2 and claim 5

Art Unit: 1638

encompass the same F1 hybrid maize plant. Dependent claims 3 and 6 recite the same limitations.

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-6, 11-18, 23, 24, 28, and 29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-31 of U.S. Patent No. 6,730,836 ('836). Although the conflicting claims are not identical, they are not patentably distinct from each other because: Instant claim 1 is drawn towards any seed comprising at least one set of chromosomes of maize inbred line PH54M. This claim encompasses seed of PH54M itself, as well as F1 hybrid progeny that have PH54M as one parent. Patented claim 1 anticipates instant claim 1, since it is directed to the inbred seed of line PH54M. Instant claims 2 and 3 are

drawn to a maize plant, or a part thereof, produced by growing the F1 hybrid maize seed of claim 1. While claim 1 encompasses seed of inbred line PH54M as well as F1 seeds having PH54M as one parent, claim 2 is being interpreted as only encompassing plants produced by growing F1 hybrid seeds. Instant claims 5 and 6 are drawn to a maize plant, or a part thereof, produced by growing an F1 hybrid seed that is produced by crossing PH54M with a different maize plant. Patented claim 8 is drawn towards a method of producing an F1 hybrid maize seed, comprising crossing a plant of line PH54M with a different maize plant and harvesting the resultant seed. It would have been obvious to one of ordinary skill in the art to grow seed produced by the method of patented claim 8 to yield the F1 hybrid plant. One would have been motivated to do so to use the F1 hybrid plant in further crosses, to produce new maize varieties, for example. Further, the method of patented claims 25 and 30 comprise producing and further crossing F1 hybrid plants that have PH54M as one parent. Instant claim 4 is drawn to an F1 hybrid seed produced by crossing PH54M with a different maize plant and harvesting the resultant seed. This is the same seed that is produced by the method of patented claim 8. One would have been motivated to carry out the method of patented claim 8, to produce and use the resultant seed. Instant claim 11 is drawn to a maize plant having all the characteristics of PH54M. Patented claim 24 is drawn to a maize plant, or part thereof, that has all the characteristics of PH54M, and therefore anticipates instant claim 11. Patented claim 1 also anticipates instant claim 11, as instant claim 11 encompasses the seed of inbred line PH54M itself. Instant claim 12 is drawn to a method of crossing the plant of claim 11 with itself or another maize plant to form seed. This process is anticipated by the method of patented claim 8. Instant claims 13-15 are drawn towards seeds that are formed by carrying out the process of instant claim 12, and growing the resultant seed to

produce a hybrid plant. Instant claim 16 is directed to maize seed produced by growing the maize plant of claim 15 and harvesting the resultant seed. One would have been motivated to grow the seed produced by patented claim 8, and produce the hybrid plant, and to use it in further crosses, to produce further desirable maize lines. Instant claim 17 is drawn to a cell of the plant of claim 11; which is anticipated by patented claims 2 and 24. Instant claim 18 is drawn to a seed comprising the cell of claim 17, which is anticipated by patented claim 1. Instant claim 23 limits the plant of claim 11 by further requiring it to comprise a gene conferring male sterility. Instant claim 24 further limits the plant of claim 11 by further requiring it to comprise a transgene that confers male sterility, herbicide resistance, insect resistance, or disease resistance. This is anticipated by patented claims 10, 12, 13, 15, 16, and 18, which are plants produced by transforming PH54M with transgenes that confer these traits. Instant claim 28 is drawn towards a method for developing a maize plant in a breeding program using the plant, or parts thereof, of claim 11. Instant claim 29 limits the method of claim 28 by reciting several breeding techniques, including backcrossing and transformation. Patented claims 9, 11, 14, 17, 19, 21, 25, and 30 each anticipate instant claims 28 and 29, as they encompass a method of transforming PH54M or a method that involves backcrosses. Instant claims 28 and 29 do not indicate when the methods are finished, that is, when the plant is developed.

5. Claims 19-22 and 25-27 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-30 of U.S. Patent No. 6,730,836 ('836) in view of Larkins (U.S. Patent No. 6,232,535).

Instant claim 19 is drawn to a maize plant having all the physiological and morphological characteristics of inbred line PH54M, further defined as having a genome comprising a single locus conversion. Claim 2 of '836 is drawn towards the maize plant of inbred line PH54M, and patented claim 24 is drawn towards a maize plant having all the physiological and morphological characteristics of inbred line PH54M. The patented claims of '836 do not encompass the plant of instant claim 19. Larkins defines "single locus conversion" as plants developed through backcrossing wherein essentially all of the desired morphological and physiological characteristics of an inbred are recovered in addition to a desirable characteristic conferred by a single locus transferred into the inbred via backcrossing. Larkins discloses that the single locus may be transgenic, which indicates that it was initially introduced into the donor line by stable transformation. Larkins discloses that the locus may be a dominant or recessive allele of a gene, and asserts that the locus can confer a trait such as insect resistance, bacterial, fungal or viral disease, and male sterility (col. 10, line 63 to col. 11, line 4). Larkins further discusses this at col. 13, line 59 to col. 17, line 5. It would have been obvious to introduce a single locus conversion into the plant of claim 2 or 24 of '836, following the method of Larkins. One would have been motivated to do so to introduce a further desirable trait, such as herbicide tolerance or resistance to bacterial, fungal, or viral disease, for example, as taught by Larkin.

Instant claim 25 is drawn to a method of producing a maize plant derived from PH54M, the method comprising steps of crossing the plant of claim 11 with a second maize plant to obtain progeny, followed by several growing and crossing steps to obtain a derived maize plant. Instant claim 26 limits the derived maize plant to be an inbred. Instant claim 27 further limits claim 26 by crossing the derived inbred with a distinct inbred to produce an F1 hybrid plant.

Larkins teaches that breeding methods are used to make plants having desirable traits, and assert that pedigree breeding is used to develop inbreds. Genetic backgrounds from two or more inbred plants are combined into breeding pools from which other inbreds are developed. After selfing for at least 5 generations, an inbred is developed (col. 1, line 15 to col. 2, line 60). Claim 8 of '836 is drawn to a method of crossing PH54M with a different maize plant to produce F1 hybrid seed. It would have been obvious to modify this method by crossing the F1 hybrid plant with another plant with a desirable characteristic, in order to produce a progeny plant of a subsequent generation. Alternatively, the plant could have been further selfed for at least 5 generations to produce a new inbred maize plant. One of ordinary skill could also have further crossed the new inbred plant with yet another distinct inbred plant to produce another hybrid plant variety. One of ordinary skill in the art would have been motivated to do so, to produce new maize varieties having desired characteristics.

6. Claims 1-6 and 13-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 9, and 10 of U.S. Patent No. 7,019,200 ('200). Although the conflicting claims are not identical, they are not patentably distinct from each other. Instant claim 1 is drawn towards any seed comprising at least one set of chromosomes of maize inbred line PH54M. This claim encompasses seed of PH54M itself, as well as F1 hybrid progeny that have PH54M as one parent, since the progeny would inherit one set of chromosomes from PH54M. Patented claim 1 is directed to seed of a hybrid maize variety designated "38F10," which was produced by crossing two Pioneer Hi-Bred Int., Inc. proprietary inbred maize lines, "GE533418" and "GE570876" (col. 8, lines 50-53; col. 40, lines 31-36).

Seeds of inbred line GE533418 have been deposited with the ATCC under Accession No. PTA-4527 (col. 8, lines 53-56; col. 40, line 31-35). Seed of inbred line PH54M of the instant application has also been deposited with the ATCC under this same number (claim 1). Inbred line PH54M and inbred line GE533418 therefore appear to be the same line. The hybrid seed of line 38F10 of patented claim 1-inherently contain one set of chromosomes of maize inbred line PH54M/GE533418, and anticipates instant claim 1. Instant claim 4 is drawn to any F1 hybrid seed produced by crossing inbred line PH54M with a different maize plant, and is anticipated by patented claim 1. Instant claims 2 and 3 are drawn to a maize plant, or a part thereof, produced by growing the F1 hybrid maize seed of claim 1. While claim 1 encompasses seed of inbred line PH54M as well as F1 seeds having PH54M as one parent, claim 2 is being interpreted as only encompassing plants produced by growing F1 hybrid seeds. Instant claim 3 is drawn to any part of the plant of claim 2. Instant claims 5 and 6 are drawn to a maize plant, or a part thereof, produced by growing an F1 hybrid seed that is produced by crossing PH54M with a different maize plant. Instant claims 2, 3, 5, and 6 are anticipated by patented claims 2-4, which are drawn to a maize plant, or part thereof, produced by growing the seed of patented claim 1; or pollen or an ovule of the plant. Instant claim 13 is drawn to maize seed produced by crossing a first and second parent maize plants, wherein one or both parent maize plants have all the physiological and morphological characteristics of inbred line PH54M. Instant claim 13 encompasses F1 hybrid maize seeds produced by crossing PH54M with a distinct maize plant, and is anticipated by patented claim 1. Instant claim 14 limits the seed of claim 13 to be a hybrid seed, and is also anticipated by patented claim 1. Instant claim 15 is drawn to a hybrid maize plant produced by growing the hybrid seed of claim 14, and is anticipated by patented claim 2.

Instant claim 16 is drawn to a seed produced by growing the hybrid maize plant of claim 15 and harvesting the resultant seed. In order to produce seed, the plant of claim 15 would be crossed with another maize plant. Patented claim 9 is drawn to a method of producing an F1 hybrid maize seed comprising crossing hybrid maize plant 38F10 with a different maize plant and harvesting the resultant F1 hybrid maize seed. The seed produced in the method of patented claim 1 is an F1 generation in relation to 38F10. Hybrid line 38F10 itself is an F1 generation in relation to line PH54M/GE533418. The seed of instant claim 16 is produced by the method of patented claim 9.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2, 3, 20, 22, and 28-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2: the claim recites the limitation, "F1 hybrid maize seed" in line 1. There is insufficient antecedent basis for the recitation.

In claim 20: the article, "a" in the recitation, "the single locus was stably inserted into a maize genome by transformation" renders the claim indefinite. It is unclear if the genome is that of the plant of claim 11, or another plant.

In claim 22: the recitations, "yield enhancement", "improved nutritional quality" render the claim indefinite. The terms are relative and have no definite meaning. The metes and bounds

of the claim are unclear.

In claim 28: the preamble of the claim indicates that the method is for developing a maize plant in a maize plant breeding program using plant breeding techniques. However, the claim does not indicate when the maize plant is developed. It is unclear when the method ends. The metes and bounds of the claim are unclear. . .

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claim is broadly drawn towards any maize seed produced by growing a hybrid maize plant, wherein the hybrid maize plant was produced by crossing a maize plant having all the morphological and physiological characteristics of maize plant PH54M with a second maize plant. As the maize seed of claim 16 is produced by growing the hybrid maize plant, and harvesting the resultant seed, the claimed seed is two generations removed from the plant having the characteristics of PH54M.

The specification teaches several morphological and physiological characteristics of PH54M in Table 1. A deposit of seed of PH54M has also been made with the ATCC under accession number PTA-4527, in accordance with 37 CFR 1.801-1.809. All F1 hybrid seed

produced from PH54M inherit one set of chromosomes from PH54M. This structure is shared with every F1 hybrid. However, when the F1 hybrid is again outcrossed, the next generation will not inherit the haploid genome of PH54M. The genome of the next generation of plants will not share the same structure as the haploid genome of PH54M, or the set of chromosomes of the F1 hybrid inherited from PH54M. There will therefore be wide variability in the genomic structure of the claimed maize seeds. The instant specification does not describe the structure of a single second generation maize seed, or any functions (morphological and physiological traits) possessed by the claimed seed. The specification does not disclose a single species of the genus of seeds encompassed by claim 16. Given the breadth of the claims encompassing second generation descendants from the plant of claim 11, and the absence of a description of a single such seed, and the variability that exists among the species of the claimed genus, it is submitted that the specification fails to provide an adequate written description of the multitude of maize seeds encompassed by the claim.

9. Claims 7-10, 19-22, 25, and 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 7 is drawn towards an F1 hybrid maize seed comprising an inbred maize plant cell of inbred maize line PH54M. There is no written description support for such a seed, or plant produced therefrom, in the specification. Claim 19 recites, "single locus conversion". Written

description support is lacking for this recitation as well. While the specification discusses "single gene conversion", it does not recite "single locus." Claim 25 is broadly drawn to a method of producing a maize plant derived from inbred line PH54M, the method comprising crossing the plant of claim 11 with any second maize plant, selfing the progeny or crossing it with a different maize plant, selfing that progeny or crossing it again with a different maize plant, and repeating these steps for an additional 0-5 generations to produce a maize plant derived from PH54M. In the paper filed September 13, 2005, page 8, Applicant argues that support for "0-5 generations" is found in the specification on pages 3-4. However, the discussion which mentions 5 generations of crossing, supports 5 generations of self-crosses to produce an inbred (paragraph bridging pages 3-4). Support is not found in the specification for the full scope of step (d) of claim 25, which encompasses the production of plants that are not inbreds. Further, there is no support for step (c) of claim 30. There is no mention of "double haploidy", or the production of progeny without the occurrence of meiotic segregation in the specification. The claims contain NEW MATTER and must be cancelled.

10. Claims 7-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 7 is drawn towards an F1 hybrid maize seed comprising an inbred maize plant cell of inbred maize line PH54M. However, the specification does not enable any such seed or plant grown therefrom. By definition, a hybrid seed cannot comprise a single cell that contains a

homozygous genome. Not a single F1 hybrid that has PH54M as a parent could have inherited two sets of chromosomes from PH54M, or contain a single cell that has two sets of chromosomes from PH54M. Neither the specification nor prior art teach how to make any such hybrid seed. Given the breadth of the claims, unpredictability of the art and lack of guidance of the specification, undue experimentation would be required by one skilled in the art to make the claimed invention.

***Claim Rejections - 35 USC § 102 & 103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 16 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Johnson (U.S. Patent No. 5859355, issued January 12, 1999).

The claim is broadly drawn towards any maize seed, produced by growing a hybrid maize plant and harvesting the resultant seed, wherein the hybrid maize plant was produced by growing seed that was produced by crossing the plant of claim 11 with any second maize plant.

Johnson et al. teach hybrid maize seeds (claims; col. 28, line 1 to col. 31, line 14). The seed may have been produced from a method different from those of the instantly claimed seed. However, the instantly claimed products do not appear to differ from the products taught by the reference. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The instant claim does not recite any limitation(s) that distinguishes the product from that of the reference.

12. Claims 1-30 are rejected.

*Contact Information*

Any inquiry concerning this or earlier communications from the Examiner should be directed to Ashwin Mehta, whose telephone number is 571-272-0803. The Examiner can normally be reached from 8:00 A.M to 5:30 P.M. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anne Marie Grunberg, can be reached at 571-272-0975. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300. Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as

Art Unit: 1638

general patent information available to the public. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

August 31, 2006



Ashwin D. Mehta, Ph.D.  
Primary Examiner  
Art Unit 1638

**ATTACHMENT TO OFFICE ACTION**

**Request for Information under 37 CFR § 1.105**

1. Applicant and the assignee of this application are required under 37 CFR § 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

2. This request is being made for the following reasons:

Applicant is claiming a seed comprising at least one set of the chromosomes of maize line PH54M, PH54M comprising a single locus conversion, seed produced by growing a hybrid maize plant having PH54M as a parent. However, the instant specification is silent about what starting materials and methods were used to produce maize line PH54M. The requested information is required to make a meaningful and complete search of the prior art.

3. In response to this requirement, please provide answers to each of the following interrogatories eliciting factual information:

(i) What were (are) the original parental maize lines used to produce maize line PH54M?

Please supply all of the designations/denominations used for the original parental maize lines and line PH54M. Please supply information pertaining to the lineage of the original parental lines back to any publicly available varieties.

(ii) What method and method steps were used to produce maize line PH54M?

(iii) At or before the time of filing of the instant application or any provisional application to which benefit is claimed, had any of said parental maize lines or progeny therefrom been disclosed or made publicly available? If so, under what

designation/denomination and under what conditions were said parental maize lines or progeny disclosed or made publicly available and from when to when?

(iv) At or before the time of filing of the instant application or any provisional application to which benefit is claimed, were any other maize lines produced by said method using said original parental maize lines, and if so, had said produced maize lines been publicly available or sold? If so, under what designation/denomination and under what conditions were said other maize lines disclosed or made publicly available and from when to when?

3. If Applicant views any or all of the above requested information as a Trade Secret, then Applicant should follow the guidance of MPEP § 724.02 when submitting the requested information.

4. In responding to those requirements that require copies of documents, where the document is a bound text or a single article over 50 pages, the requirement may be met by providing copies of those pages that provide the particular subject matter indicated in the requirement, or where such subject matter is not indicated, the subject matter found in applicant's disclosure. Please indicate where the relevant information can be found.

5. The fee and certification requirements of 37 CFR § 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 CFR § 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 CFR § 1.105 are subject to the fee and certification requirements of 37 CFR § 1.97.

6. The Applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR § 1.56. Where the applicant does not have or cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained may be accepted as a complete reply to the requirement for that item.
7. This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.



ANNE MARIE GRUNBERG  
SUPERVISORY PATENT EXAMINER

## INFORMATION DISCLOSURE CITATION

Applicant

Todd Elliott Piper

(Use several sheets if necessary)

Filing Date  
1/12/01Group Art Unit  
1638

## U.S. &amp; FOREIGN PATENT DOCUMENTS

SEARCHER'S INITIAL	DOCUMENT NUMBER	DATE	NAME		CLASS	SUB. CLA. BS	PUBLISH. DATE
			NAME	NAME			
AM	1 6 0 3 9 0	EP					11/6/85

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

A1 AM Conger, B.V., et al. (1987) "Somatic Embryogenesis From Cultured Leaf Segments of *Zea Mays*", *Plant Cell Reports*, 6:345-347.

A2 Duncan, D.R., et al. (1985) "The Production of Callus Capable of Plant Regeneration From Immature Embryos of Numerous *Zea Mays* Genotypes", *Planta*, 165:322-332.

A3 Edalio, et al. (1981) "Chromosomal Variation and Frequency of Spontaneous Mutation Associated with *In Vitro* Culture and Plant Regeneration in Maize", *Mavdica*, XXVI: 39-56.

A4 Green, et al., (1975) "Plant Regeneration From Tissue Cultures of Maize", *Crop Science*, Vol. 15, pp. 417-421.

A5 Green, C.E., et al. (1982) "Plant Regeneration in Tissue Cultures of Maize" *Maize for Biological Research*, pp. 367-372.

A6 Hallauer, A.R. et al. (1988) "Corn Breeding" *Corn and Corn Improvement*, No. 18, pp. 463-481.

A7 Meghji, M.R., et al. (1984). "Inbreeding Depression, Inbred & Hybrid Grain Yields, and Other Traits of Maize Genotypes Representing Three Eras", *Crop Science*, Vol. 24, pp. 545-549.

A8 Phillips, et al. (1988) "Cell/Tissue Culture and *In Vitro* Manipulation", *Corn & Corn Improvement*, 3rd Ed., ASA Publication, No. 18, pp. 345-387.

A9 Poehlman et al., (1995) *Breeding Field Crop*, 4th Ed., Iowa State University Press, Ames, IA., pp. 132-155 and 321-344.

A10 Rao, K.V., et al., (1986) "Somatic Embryogenesis in Glume Callus Cultures", *Maize Genetics Cooperative Newsletter*, No. 60, pp. 64-65

A11 Sass, John F. (1977) "Morphology", *Corn & Corn Improvement* ASA Publication, Madison, Wisconsin, pp. 89-109.

A12 Songstad, D.D. et al. (1988) "Effect of ACC (1-aminocyclopropane-1-carboxylic acid), Silver Nitrate & Norbonidine on Plant Regeneration From Maize Callus Cultures", *Plant Cell Reports*, 7:262-265.

A13 Tomei, et al. (1985) "The Effect of Parental Genotype on Initiation of Embryogenic Callus From Elite Maize (*Zea Mays* L.) Germplasm", *Theor. Appl. Genet.*, Vol. 70, p. 505-509.

A14 Troyer, et al. (1985) "Selection for Early Flowering in Corn: 10 Late Synthetics", *Crop Science*, Vol. 25, pp. 695-697.

A15 Umbeck, et al. (1983) "Reversion of Male-Sterile T-Cytoplasm Maize to Male Fertility in Tissue Culture", *Crop Science*, Vol. 23, pp. 584-588.

A16 Wright, Harold (1980) "Commercial Hybrid Seed Production", *Hybridization of Crop Plants*, Ch. 8: 161-176.

A17 Wych, Robert D. (1988) "Production of Hybrid Seed", *Corn and Corn Improvement*, Ch. 9, pp. 565-607.

A18 Lee, Michael (1994) "Inbred Lines of Maize and Their Molecular Markers", *The Maize Handbook* Ch. 65:423-432

A19 Boppenmaier, et al., "Comparisons Among Strains of Inbreds for RFLPs", *Maize Genetics Cooperative Newsletter*, 65:4991, pg. 90 (1991)

A20 AM Smith, J.S.C., et al., "The Identification of Female Selfs in Hybrid Maize: A Comparison Using Electrophoresis and Morphology", *Seed Science and Technology* 14, 1-8 (1986).

## EXAMINER

/Ashwin Mehta/

## DATE CONSIDERED

08/29/2006

\*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 602. Draw line through citation if not in conformance and not considered. Include a copy of this form with next communication to applicant.

BEST AVAILABLE COPY

<b>Notice of References Cited</b>			Application/Control No.	Applicant(s)/Patent Under Reexamination	
			10/764,899	PIPER, TODD ELLIOTT	
Examiner			Art Unit	Page 1 of 1	
Ashwin Mehta			1638		

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,859,355	✓ 01-1999	Johnson, Steve K.	800/320.1
*	B	US-6,730,836	✓ 05-2004	Piper, Todd Elliott	800/320.1
*	C	US-6,232,535	✓ 05-2001	Larkins, James R.	800/320.1
*	D	US-7,019,200	✓ 03-2006	Wehrmann, Hartwig Josef Bernhard	800/320.1
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : **PIPER, Todd Elliott**  
SERIAL NO : 10/764,899  
FILED : January 26, 2004  
TITLE : INBRED MAIZE LINE PH54M

Grp./A.U. : 1638  
Examiner : MEHTA, Ashwin D.  
Conf. No. : 2639  
Docket No. : P06270US01 - PHI 1363C

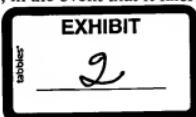
**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING  
REJECTION OVER A PRIOR PATENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

The owner, Pioneer Hi-Bred International, Inc. of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 to 156 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. 6,730,836. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 to 156 and 173 of the prior patent, as presently shortened by any terminal disclaimer, in the event that it later expires for failure to pay a



maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims cancelled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

The undersigned is an attorney of record.

A check in the amount of \$130.00 to cover the fee for a terminal disclaimer under 37 CFR 1.20(d) is included. Please charge any deficiencies or credit any overpayment to Deposit Account No. 26-0084.

Respectfully submitted,



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Attorneys of Record

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT : **PIPER, Todd Elliott**  
SERIAL NO : 10/764,899  
FILED : January 26, 2004  
TITLE : INBRED MAIZE LINE PH54M

Grp./A.U. : 1638  
Examiner : MEHTA, Ashwin D.  
Conf. No. : 2639  
Docket No. : P06270US01 - PHI 1363C

**AMENDMENT AND RESPONSE TO REQUEST  
FOR INFORMATION UNDER 37 C.F.R. § 1.105**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In response to the communication from the Examiner September 8, 2006, it is respectfully requested that this Amendment be entered and made of record. The following amendments and remarks place the application in form for allowance. No new matter is presented, as such the Amendment is proper under 37 C.F.R. §1.121. Applicant respectfully requests reconsideration.

**Introductory Comments**

Claims 1-30 are pending in the present application.

**Amendments to the Specification** begin on page 2 of this paper.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 3 of this paper.

**Remarks/Arguments** begin on page 7 of this paper.

---

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))  
I hereby certify that this correspondence is, on the date shown below, being:

MAILING  
 deposited with the United States Postal Service with sufficient postage as First Class mail in an envelope addressed to the Commissioner for Patents, P.O. Box Mail Stop Amendment, Alexandria, VA 22313-1450.

ELECTRONIC/FACSIMILE  
 transmitted by electronic/facsimile to the Patent and Trademark Office, Art Unit 1638  
Attn: (571) 273-8300.

**EXHIBIT**

3

LILA A. T. AKRAD

Date: 1/8/07

*Lila A. T. Akrad*

**Amendments to the Specification**

Please replace the paragraph at page 1, beginning at line 10, under the heading **Cross Reference to Related Applications** with the following:

This application is a continuation of U. S. Patent Application No. 09/759,801, now U.S. Patent No. 6,730,836, filed on January 12, 2001, the contents of which are hereby incorporated by reference in their entirety:

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Original): A seed comprising at least one set of the chromosomes of maize inbred line PH54M, representative seed of said line having been deposited under ATCC Accession No. PTA-4527.

Claim 2 (Currently amended): A maize plant produced by growing the an F1 hybrid maize seed of claim 1.

Claim 3 (Original): A maize plant part of the maize plant of claim 2.

Claim 4 (Original): An F1 hybrid maize seed produced by crossing a plant of maize inbred line designated PH54M, representative seed of said line having been deposited under ATCC Accession No. PTA-4527, with a different maize plant and harvesting the resultant F1 hybrid maize seed, wherein said F1 hybrid maize seed comprises two sets of chromosomes and one set of the chromosomes is the same as maize inbred line PH54M.

Claim 5 (Original): A maize plant produced by growing the F1 hybrid maize seed of claim 4.

Claim 6 (Original): A maize plant part of the maize plant of claim 5.

Claim 7 (Previously presented): An F1 hybrid maize seed comprising an inbred maize plant cell of inbred maize line PH54M, representative seed of said line having been deposited under ATCC Accession No. PTA-4527.

Claim 8 (Original): A maize plant produced by growing the F1 hybrid maize seed of claim 7.

Claim 9 (Previously presented): The F1 hybrid maize seed of claim 7 wherein the inbred maize plant cell comprises two sets of chromosomes of maize inbred line PH54M.

Claim 10 (Original): A maize plant produced by growing the F1 hybrid maize seed of claim 9.

Claim 11 (Previously presented): A maize plant having all the physiological and morphological characteristics of inbred line PH54M, wherein a sample of the seed of inbred line PH54M was deposited under ATCC Accession Number PTA-4527.

Claim 12 (Previously presented): A process of producing maize seed, comprising crossing a first parent maize plant with a second parent maize plant, wherein one or both of the first or the second parent maize plants is the plant of claim 11, wherein seed is allowed to form.

Claim 13 (Previously presented): The maize seed produced by the process of claim 12.

Claim 14 (Previously presented): The maize seed of claim 13, wherein the maize seed is hybrid seed.

Claim 15 (Previously presented): A hybrid maize plant, or its parts, produced by growing said hybrid seed of claim 14.

Claim 16 (Canceled)

Claim 17 (Previously presented): A cell of the maize plant of claim 11.

Claim 18 (Previously presented): A seed comprising the cell of claim 17.

Claim 19 (Currently amended): The maize plant of claim 11, further defined as having a genome comprising a single locus gene conversion.

Claim 20 (Currently amended): The maize plant of claim 19, wherein the single locus gene was stably inserted into a maize genome by transformation.

Claim 21 (Currently amended): The maize plant of claim 19, wherein the locus gene is selected from the group consisting of a dominant allele and a recessive allele.

Claim 22 (Currently amended): The maize plant of claim 19, wherein the locus gene confers a trait selected from the group consisting of herbicide tolerance; insect resistance; resistance to bacterial, fungal, nematode or viral disease; yield enhancement; waxy starch; improved nutritional quality; male sterility and restoration of male fertility.

Claim 23 (Previously presented): The maize plant of claim 11, wherein said plant is further defined as comprising a gene conferring male sterility.

Claim 24 (Previously presented): The maize plant of claim 11, wherein said plant is further defined as comprising a transgene conferring a trait selected from the group consisting of male sterility, herbicide resistance, insect resistance and disease resistance.

Claim 25 (Currently amended): A method of producing a maize plant derived from the inbred line PH54M, the method comprising the steps of:

- (a) growing a progeny plant produced by crossing the plant of claim 11 with a second maize plant;
- (b) crossing the progeny plant with itself or a different plant to produce a seed of a progeny plant of a subsequent generation;
- (c) growing a progeny plant of a subsequent generation from said seed and crossing the progeny plant of a subsequent generation with itself or a different plant; and
- (d) repeating steps (b) and (c) for an additional 0-5 generations to produce a maize plant derived from the inbred line PH54M.

Claim 26 (Currently amended): The method of claim 25, wherein the produced maize plant derived from the inbred line PH54M is an inbred maize plant.

Claim 27 (Currently amended): The method of claim 26, further comprising the step of crossing the inbred maize plant ~~derived from the inbred line PH54M~~ with a second, distinct inbred maize plant to produce an F1 hybrid maize plant.

Claim 28 (Currently amended): A method for developing a maize plant in a maize plant breeding program using plant breeding techniques ~~comprising~~ employing a maize plant, or its parts, as a source of plant breeding material comprising using the maize plant of claim 11, or parts thereof, as a source of said breeding material.

Claim 29 (Previously presented): The method for developing a maize plant in a maize plant breeding program of claim 28 wherein plant breeding techniques are selected from the group consisting of recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

Claim 30 (Currently amended): A method of plant breeding comprising ~~The method of claim 29 wherein the plant breeding program technique comprises the steps of:~~

- (a) obtaining the a molecular marker profile of maize inbred line PH54M, representative seed of said line having been deposited under ATCC Accession No. PTA-4527;
- (b) obtaining an F1 hybrid seed for which the maize plant of claim 11 inbred line PH54M is a parent;
- (c) inducing doubled haploidy of the F1 hybrid seed to create progeny without the occurrence of meiotic segregation crossing a plant grown from the F1 hybrid seed with a different maize plant; and
- (d) selecting progeny that retain the molecular marker profile of PH54M.

## REMARKS

The present application relates to inbred maize plant and seed PH54M. Claims 1-30 are pending in the present application. Claims 2, 19-22, 25-28, and 30 have been amended. Claim 16 has been canceled. No new matter has been added by way of amendment. Applicant respectfully requests consideration of the claims in view of the following remarks.

### Detailed Action

Applicant has amended the specification to include the U.S. Patent No. of the parent application on page 1, lines 10-12 as requested by the Examiner. No new matter has been added.

Applicant further acknowledges that a proper form 1449 Information Disclosure Statement (IDS) has been submitted as requested by the Examiner.

### Claim Objections

The Examiner states that "should claims 2 and 3 be found allowable, claims 5 and 6 will be objected to under 37 C.F.R. § 1.75 as being a substantial duplicate thereof". *See* Office Action, pp. 2-3.

Applicant respectfully traverses this objection. The scope of the claims in claims 2-3 and 5-6 are not the same. Claims 2 and 3 are to a maize plant or maize plant part from the seed having been deposited under ATCC Accession No. PTA-4527. In contrast, claims 5 and 6 are to a maize plant or maize plant part of an F1 hybrid maize seed crossed with a different maize plant. Further, Applicant assert claims 2-3 and 5-6 are in proper dependent form as taught in MPEP § 608.01(n) and 37 C.F.R. § 1.75(c). Moreover, Applicant are aware that in view of a meeting with the Group Director in July 2006, the Examiner's were informed that the present claim set, including claims 2-3 and 5-6, were in proper form and would be allowable as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Applicant respectfully requests this objection be alleviated in light of the above statements.

### Double Patenting

The Examiner rejects claims 1-6, 11-18, 23, 24, 28 and 29 under the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-31 of

copending U.S. Patent No. 6,730,836. The Examiner states that although the conflicting claims are not identical, they are not patentably distinct from each other. *See Office Action*, pp. 3-5.

Applicant is herein submitting a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321(c), which disclaims any term of a patent issuing from this application which would extend beyond the term of copending U.S. Patent No. 6,730,836.

The Examiner further rejects claims 19-22 and 25-27 under the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-30 of copending U.S. Patent No. 6,730,836 in view of Larkins (U.S. Patent No. 6,232,535). The Examiner states that although the conflicting claims are not identical, they are not patentably distinct from each other. *See Office Action*, pp. 5-7.

Applicant is herein submitting a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321(c), which disclaims any term of a patent issuing from this application which would extend beyond the term of copending U.S. Patent No. 6,730,836 in view of Larkins (U.S. Patent No. 6,232,535).

The Examiner further rejects claims 1-6 and 13-16 under the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 9, and 10 of copending U.S. Patent No. 7,019,200. The Examiner states that although the conflicting claims are not identical, they are not patentably distinct from each other. *See Office Action*, pp. 7-9.

Applicant is herein submitting a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321(c), which disclaims any term of a patent issuing from this application which would extend beyond the term of copending U.S. Patent No. 7,019,200.

Therefore, Applicant submits that the claims are in proper form for allowance and respectfully request reconsideration and withdrawal of the nonstatutory obviousness-type double patenting rejections.

#### **Rejections Under 35 U.S.C. § 112, Second Paragraph**

Claims 2, 3, 20, 22, and 28-30 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. *See Office Action*, pp. 9-10.

The Examiner states that claim 2 is indefinite for insufficient antecedent basis for "F1 hybrid maize seed". Applicant has now amended claim 2 to delete the language "the" and

include the language --an--, in accordance with MPEP § 2173.05(d), thereby alleviating this rejection.

Claim 20 is indefinite according to the Examiner for "the article 'a' in the recitation, 'the single locus was stably inserted into a maize genome by transformation'". Although not acceding to the Examiner's rejection, in an effort to reduce the issues upon appeal, Applicant has now amended claim 20 to include the language --of the plant of claim 11--, as suggested by the Examiner, thus alleviating this rejection.

The Examiner states that claim 22 is indefinite in the recitation "yield enhancement" and "improved nutritional quality". Applicant respectfully traverses. "Yield Advantage" is defined on page 15 of the specification as "the yield advantage of variety #1 over variety #2". Therefore yield enhancement would be the improvement of the trait yield over another variety. Applicant asserts that genes which increase yield by increasing the plants resistance to disease, herbicides, or insects are within the scope of the claims as presented. The specification teaches multiple ways of introgressing or transforming a maize plant with various genes which confer advantageous traits desired in the plant. *See* specification, pp. 22-34. The specification also teaches many transgenes that could be inserted into the plant of claim 11. *See* specification, pp. 28-32. In addition, see U.S. Patent No. 5,936,145, issued August 10, 1999, which is prior to the filing date of the instant application. Claim 39 reads as follows: "[t]he single gene conversion of the corn plant of claim 29, where the gene confers enhanced yield stability." Thus, a single gene that confers enhanced yield stability was known in the art prior to the filing date of the instant application. One of skill in the art would recognize that it is common to transform a maize plant with various genes in order to confer desired traits to the maize plant.

Similarly, "improved nutritional quality" would represent an improvement in the nutritional quality versus another variety as described on page 21 of the specification. Further, single genes that affect nutritional quality are known in the art. Specifically genes for modified fatty acids, decreased phytate content and modified carbohydrate compositions which are disclosed in the specification on pp. 31-32. Applicant respectfully submits that one skilled in the art would thus recognize that claim 22 is adequately defined.

Claim 28 is indefinite "as the preamble of the claim indicates that the method is for developing a maize plant breeding program using plant breeding techniques...the claim does not indicate when the maize plant is developed". Applicant traverses this rejection. Applicant has

obtained allowance from the Supervisory Patent Examiner, Anne Marie Grunberg, regarding claim 28 as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Moreover, Applicant is aware that in view of a meeting with the Group Director in July 2006, the Examiner's were informed that the present claim set, including claim 28, was in proper form and would be allowable as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Applicant respectfully requests this rejection be alleviated in light of the above statements.

In light of the above amendments and remarks, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

#### **Rejections Under 35 U.S.C. § 112, First Paragraph**

##### *A. Written description regarding Claim 16*

Claim 16 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claims(s) contains subject matter, which was not described in the specification in such a way as reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner states "the claim is broadly drawn towards any maize seed produced by growing a hybrid maize plant, wherein the hybrid maize plant was produced by crossing a maize plant having all the morphological and physiological characteristics of maize plant PH54M with a second maize plant". *See* Office Action, pp. 10-11.

Although not acceding to the Examiner's rejection, in an effort to expedite prosecution and reduce the issues upon appeal, Applicant has now canceled claim 16, thereby alleviating this rejection.

##### *B. Written description regarding Claims 7-10, 19-22, 25 and 30*

Claims 7-10, 19-22, 25 and 30 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claims(s) contains subject matter, which was not described in the specification in such a way as reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. *See* Office Action, pp. 11-12.

The Examiner states that claim 7 is "drawn to an inbred maize plant cell of inbred maize line PH54M...there is no written description support for such a seed, or plant produced therefrom, in the specification".

Applicant traverses this rejection. Applicant asserts there is adequate written description in the specification for "an inbred maize plant cell" on pages 21-22 of the specification:

As used herein, the term plant includes plant cells, plant protoplasts, plant cell tissue cultures from which maize plants can be regenerated, plant calli, plant clumps, and plant cells that are intact in plants or parts of plants, such as embryos, pollen; ovules, seeds, flowers, kernels, ears, cobs, leaves, husks, stalks, roots, root tips, anthers, silk and the like. Specification, p. 22-23.

Applicant asserts that the use of this terminology would be well understood to one ordinarily skilled in the art. In addition, Applicant is aware that in view of a meeting with the Group Director in July 2006, the Examiner's were informed that the present claim set, including claim 7, were in proper form and would be allowable as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Applicant respectfully requests this rejection be alleviated in light of the above statements.

The Examiner goes on to state that claim 19 lacks written description support for "single locus conversion". Although not acceding to the Examiner's rejection, in an effort to expedite prosecution, Applicant has amended claims 19-22 to read "single gene conversion", as supported in the specification on page 21, further defining the claims. Applicant further submits that the terms "single gene conversion" and "single locus conversion" are synonymous and would be well understood by one of ordinary skill in the art. Applicant respectfully submits that one skilled in the art would thus recognize that Applicant has adequately described claim 19.

The Examiner states that claim 25 "does not have support for '0-5 generations'". Applicant traverses this rejection. Applicant asserts the specification provides adequate written description for the claimed language:

Pedigree breeding starts with the crossing of two genotypes, each of which may have one or more desirable characteristics that is lacking in the other or which complements the other. If the two original parents do not provide all the desired characteristics, other sources can be included in the breeding population. In the pedigree method, superior plants are selfed and selected in successive generations. In the succeeding generations the heterozygous condition gives way to homogeneous lines as a result of self-pollination and selection. Typically in the pedigree method of breeding five or more generations of selfing and selection is practiced:  $F_1 \rightarrow F_2$ ;  $F_2 \rightarrow F_3$ ;  $F_3 \rightarrow F_4$ ;  $F_4 \rightarrow F_5$ , etc. Specification, pp. 3-4.

It is also important to note that after five or more backcross generations with selection for the desired trait, the progeny will be homozygous for loci controlling the characteristic being transferred, but will be like the superior parent. *See* specification, p. 4, ll. 13-16. Applicant respectfully submits that one skilled in art would recognize that Applicant has adequately described claim 25.

Furthermore, in an effort to expedite prosecution Applicant has amended claim 25 in a manner which has obtained allowance from the Supervisory Patent Examiner, Anne Marie Grunberg, as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Moreover, Applicant is aware that in view of a meeting with the Group Director in July 2006, the Examiner's were informed that the present claim set, including claim 25, was in proper form and would be allowable as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Applicant respectfully requests this rejection be alleviated in light of the above statements.

The Examiner further states that claims "there is no support for step (c) of claim 30.

Although not acceding to the Examiner's rejection, in an effort to expedite prosecution, Applicant has amended claim 30 in a manner which has obtained allowance from the Supervisory Patent Examiner, Anne Marie Grunberg, as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Thus, Applicant respectfully requests this rejection be alleviated in light of the amendment and the above statements.

One skilled in the art would thus recognize that Applicant has fully described and fully satisfied the legal standards of written description for claims 7-10, 19-22, 25 and 30 as of the filing date of the application. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the written description rejections under 35 U.S.C. §112, first paragraph.

#### *C. Enablement regarding Claims 7-10*

Claims 7-10 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. *See* Office Action, pp. 12-13.

The Examiner states that claim 7 is not enabled. Applicant traverses this rejection. Applicant asserts that claim 7 is adequately described and further enabled as evidenced by the statements described *supra*. Further, Applicant is aware that in view of a meeting with the

Group Director in July 2006, the Examiner's were informed that the present claim set, including claim 7, was in proper form and would be allowable as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Applicant respectfully requests this rejection be alleviated in light of the above statements

Applicant further asserts that dependent claims 8-10 are also adequately described and enabled. The Examiner does not provide explanation as to why these claims are not enabled. Nevertheless, Applicant maintains the arguments described *supra* also apply to dependent claims 8-10. Moreover, Applicant is aware that in view of a meeting with the Group Director in July 2006, the Examiner's were informed that the present claim set, including claims 8-10, was in proper form and would be allowable as has been evidenced in analogous allowed and issued Pioneer Hi-Bred Int'l, Inc. inbred continuation cases. Applicant respectfully requests this rejection be alleviated in light of the above statements.

Accordingly, Applicant submits that claims 7-10 are fully enabled and have fully satisfied the legal standards for enablement. Applicant respectfully requests reconsideration and withdrawal of the enablement rejections under 35 U.S.C. § 112, first paragraph.

#### **Rejections Under 35 U.S.C. §§ 102(b)/103(a)**

Claim 16 is rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Johnson (U.S. Patent 5,859,355). The Examiner states that "seed may have been produced from a method different from those of the instantly claimed seed. However the instantly claimed products do not appear to differ from the products taught by the reference". *See* Office Action, pp. 13-14.

Although not acceding to the Examiner's rejection, in an effort to expedite prosecution, claim 16 has been canceled, thus alleviating this rejection. Applicant respectfully requests the Examiner withdraw the rejections to claim 16 under 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a) as obvious over Johnson (U.S. Patent 5,859,355).

#### **Request for Information under 37 C.F.R. § 1.105**

The Examiner has made a Request for Information under 37 C.F.R. § 1.105. The Examiner states the requested information is "required to make a meaningful and complete search of the prior art". *See* Office Action- Request for Information Under 37 C.F.R.

§ 1.105, pp. 16-18.

Applicant provides answers to each of the Examiner's interrogatories discussed *infra*.

The Examiner begins by asking firstly, what were the original parental maize lines used to produce maize inbred line PH54M? Please supply information pertaining to the lineage of the original parental lines back to any publicly available varieties. PHAA0 and PHBM0.

Information pertaining to the lineage of the original parental lines is available within the PVP Application No. 200200008, attached as Appendix 1.

Secondly, what method and steps were used to produce maize inbred line PH54M?

Pedigree selection method produced by selfing and selection for 6 generations.

Third, have any of said parental maize lines or progeny therefrom been disclosed or made publicly available?

a. The parental maize line PHAA0 was previously disclosed or made publicly available in PVP Certificate No. 9400091 and U.S. Patent No. 5,602,317. The parental maize line PHBM0 has not been previously publicly disclosed or made publicly available.

b. No other progeny of the parental cross PHAA0/PHBM0 was previously publicly disclosed or made publicly available by Applicant prior to the earliest priority date

Fourth, were any other maize lines produced by said method using said original parental maize lines, and if so, have said produced maize lines been publicly available or sold? If so, under what designation/denomination and under what conditions were said other maize lines disclosed or made publicly available? No other maize line using the same F1 cross has been produced by said method using said original parental maize lines at or before the time of filing of the instant application.

In light of the above remarks, Applicant respectfully requests reconsideration and compliance with the interrogatories under the Request for Information under 37 C.F.R. § 1.105.

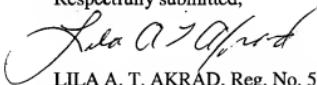
### **Conclusion**

In conclusion, Applicant submits in light of the above amendments and remarks, the claims as amended are in a condition for allowance, and reconsideration is respectfully requested. If it is felt that it would aid in prosecution, the Examiner is invited to contact the undersigned at the number indicated to discuss any outstanding issues.

Please consider this a one month extension of time from December 8, 2006 to January 8, 2007, under the provision of 37 C.F.R. § 1.136(a) and charge Deposit Account No. 26-0084 for the amount of \$120.00. No other fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any fees inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : **PIPER, Todd Elliott**  
SERIAL NO : 10/764,899  
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TITLE : INBRED MAIZE LINE PH54M

Grp./A.U. : 1638  
Examiner : MEHTA, Ashwin D.  
Conf. No. : 2639  
Docket No. : P06270US01 - PHI 1363C

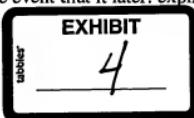
**TERMINAL DISCLAIMER TO OBVIA TE A DOUBLE PATENTING  
REJECTION OVER A PRIOR PATENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

The owner, Pioneer Hi-Bred International, Inc. of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 to 156 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. 6,232,535. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 to 156 and 173 of the prior patent, as presently shortened by any terminal disclaimer, in the event that it later expires for failure to pay a



maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims cancelled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

The undersigned is an attorney of record.

A check in the amount of \$130.00 to cover the fee for a terminal disclaimer under 37 CFR 1.20(d) is included. Please charge any deficiencies or credit any overpayment to Deposit Account No. 26-0084.

Respectfully submitted,



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